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PTO SB-08A (08-00)

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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 2

Complete if Known

Application Number	09/724,784
Filing Date	11/28/00
First Named Inventor	Marc A. Unger
Group Art Unit	1772
Examiner Name	Unassigned
Attorney Docket Number	20174003000

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ¹ (if known)			
	1	6,174,365	B1	Sanjoh	01-16-2001	
	2	6,007,309		Hartley	12-28-1999	
	3	5,876,187		Atromowitz et al	03-02-1999	
	4	5,836,750		Cabuz	11-17-1998	
	5	5,759,014		Van Lintel	06-02-1998	
	6	5,705,018		Hartley	01-06-1998	
	7	5,659,171		Young et al.	08-19-1997	
	8	5,529,465		Zengerle et al.	06-25-1996	
	9	5,376,252		Ekstrom et al.	12-27-1994	
	10	5,375,979		Trah	12-27-1994	
	11	5,336,062		Richter	08-09-1994	
	12	5,265,327		Fans et al.	11-30-1993	
	13	5,259,737		Kamisuki et al.	11-09-1993	
	14	5,224,843		Van Lintel	07-06-1993	
	15	5,171,132		Miyazaki et al.	12-15-1992	
	16	5,096,388		Weinberg	03-17-1992	
	17	5,085,562		Van Lintel	02-04-1992	
	18	4,153,855		Feingold	05-08-1979	
	19	4,119,368		Yamazaki	10-10-1978	

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FOREIGN PATENT DOCUMENTS								
Examiner Initials*	Cite No.	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		Office ¹	Number ²	Kind Code ³ (if known)				
	20	WO	99/17093	A1		04-08-1999		
	21	WO	98/07069	A1		02-19-1998		
	22	EP	999 055	A2		10-05-2000		
	23	EP	845 603	A1		06-03-1998		
	24	EP	829 360	A2		03-18-1998		
	25	EP	779 436	A2		06-18-1997		
	26	EP	706 004	A2		04-10-1996		
	27	EP	703 364	A1		03-27-1996		
	28	EP	592 094	A2		04-13-1994		
	29	GB	2 308 460	A		06-25-1997		
	30	GB	2 155 152	A		09-18-1985		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

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First Named Inventor	Marc A. Unger
Group Art Unit	1772
Examiner Name	Unassigned
Attorney Docket Number	20174003000

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

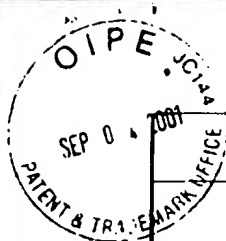
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	31	Brechtel et al., "Control of the electroosmotic flow by metal-salt-containing buffers," <u>J Chromatography A</u> , 716:97-105 (1995).	
	32	Bryzek et al., "Micromachines on the march," <u>8045 IEEE Spectrum</u> , 31(5):20-31 (1994). XP 000456261	
	33	Buchaillet et al., "Silicon Nitride Thin Films Young's Modulus Determination by an Optical Non-Destructive Method," <u>Jpn. J. Appl. Phys.</u> , 36 Pt. 2(6B):L794-L797 (1997).	
	34	Chiu et al., "Patterned deposition of cells and proteins onto surfaces by using three-dimensional microfluidic systems", <u>PNAS</u> , 97(6):2408-2413 (2000).	
	35	Chou et al., "A microfabricated device for sizing and sorting DNA molecules," <u>PNAS</u> , 96:11-13 (1999).	
	36	Delamarche et al., "Patterned Delivery of Immunoglobulins to Surfaces Using Microfluidic Networks," <u>Science</u> , 276:779-781 (1997).	
	37	Duffy et al., "Rapid Prototyping of Microfluidic Systems in Poly(dimethylsiloxane)", <u>Analytical Chemistry</u> , 70(23):4974-4984 (1998).	
	38	Duffy et al., "Rapid prototyping of microfluidic switches in poly(dimethyl siloxane) and their actuation by electro-osmotic flow," <u>J. Micromech. Microeng.</u> , 9:211-217 (1999).	
	39	Duffy et al., "Patterning Electroluminescence Materials with Feature Sizes as Small as 5µm Using Elastomeric Membranes as Masks for Dry Lift-Off," <u>Advanced Materials</u> , 11(7):546-552 (1999) XP-000849014	
	40	Effenhauser et al., "Integrated capillary electrophoresis on flexible silicone microdevices: Analysis of DNA restriction fragments and detection of single DNA molecules on microchips," <u>Anal. Chem.</u> , 69:3451-3457 (1997).	
	41	Effenhauser et al., "Integrated chip-based capillary electrophoresis," <u>Electrophoresis</u> , 18:2203-2213 (1997).	
	42	Fahrenberg et al., "A microvalve system fabricated by thermoplastic molding," <u>J. Micromech. Microeng.</u> , 5:169-171 (1995).	
	43	Fu et al., "A microfabricated fluorescence-activated cell sorter," <u>Nature Biotechnology</u> , 17:1109-1111 (1999).	
	44	Goll et al., "Microvalves with bistable buckled polymer diaphragms," <u>J. Micromech. Microeng.</u> , 6:77-79 (1996).	
	45	Graveson et al., "Microfluidics—a review", <u>J. Micromech. Microeng.</u> , 3:168-182 (1993)	

Tombeck et al., "Bistable Deformable Mirror Device," Spatial Light Modulators and Applications 1988 Technical Digest Series, Volume 8, Postconference Edition, Summaries of papers presented at the Spatial Light Modulators and Applications Topical Meeting, June 15-17, 1988, Optical Society of America, pgs. 107-110.



48	Hosokawa et al., "Handling of Picoliter liquid samples in a poly(dimethylsiloxane)-based microfluidic device," <u>Anal. Chem.</u> , 71(20):4781-4785 (1999).
49	Ikuta et al., "Three dimensional micro integrated fluid systems (MIFS) fabricated by stereo lithography," <u>IEEE Kvushu Institute of Technology</u> , pgs. 1-6 (1994).
50	Jacobson et al., "High-speed separations on a microchip," <u>Anal. Chem.</u> , 66(7):1114-1118 (1994).
51	Jacobson et al., "Microfluidic devices for electrokinetically driven parallel and serial mixing," <u>Anal. Chem.</u> , 71(20):4455-4459 (1999).
52	Jung et al., "Chemical and Physical Interactions at Metal/Self-Assembled Organic Monolayer Interfaces," <u>Crit. Rev. Solid State Material Sciences</u> , 19(1):2-10 (1994) XP000955639
53	Kenis et al., "Microfabrication inside capillaries using multiphase laminar flow patterning," <u>Science</u> , 285:83-85 (1999).
54	Kopp et al., "Chemical Amplification: Continuous-Flow PCR on a Chip", <u>Science</u> , 280:1046-1048 (1998).
55	Kuhn et al., "Silicon Charge Electrode Array for Ink Jet Printing", <u>IEEE Transactions on Electron Devices</u> , ED-25(10):1257-1260 (1978).
56	Lin et al., "Free-space micromachined optical switches for optical networking," <u>IEEE J. Selected Topics in Quantum Electronics</u> , 5(1):4-9 (1999).
57	Lötters et al., "The mechanical properties of the rubber elastic polymer polydimethylsiloxane for sensor applications," <u>J. Micromech. Microeng.</u> , 7:145-147 (1997).
58	Lucy et al., "Characterization of the cationic surfactant induced reversal of electroosmotic flow in capillary electrophoresis," <u>Anal. Chem.</u> , 68:300-305 (1996).
59	Maluf, N., <u>An Introduction to Microelectromechanical Systems Engineering</u> , Artech House Publishers, Boston London pages 42-45.
60	Markx et al. "Applications of dielectrophoresis in biotechnology," <u>Tibtech</u> , 15:426-432 (1997).
61	Muller et al., "Surface-micromachined microoptical elements and systems," <u>Proceedings of IEEE</u> , 86(8):1705-1720 (1998).
62	Qin et al., "Elastomeric Light Valves" <u>Advanced Materials</u> , 9(5):407-410 (1997) XP-000683891
63	Qin et al., "Photolithography with transparent reflective photomasks," <u>J. Vac. Science and Technology</u> , 16(1):98-103 (1998) XP00213356
64	Rapp, R., "LIGA micropump for gases and liquids," <u>Sensors and Actuators A</u> , 40:57-61 (1994).
65	Roylance et al., "A Batch-Fabricated Silicon Accelerometer", <u>IEEE Transactions on Electron Devices</u> , ED-26(12):1911-1917 (1979).
66	Schasfoort et al., "Field-effect flow control for microfabricated fluidic networks," <u>Science</u> , 286:942-945 (1999).
67	Schuelker et al., "Fabrication of glassy carbon microstructures by soft lithography," <u>Sensors and Actuators A</u> , 72(2):125-139 (1999) XP004155654
68	Shoji, S., "Fluids for Sensor Systems", <u>Topics in Current Chemistry</u> , 194:162-188 Springer Verlag Berlin Heidelberg (1998).
69	Smuts, J.G., "Piezoelectric Micropump with Three Valves Working Peristaltically," <u>Sensors and Actuators</u> , A21-A23:203-206 (1990).
70	Tufte et al., "Silicon diffused-element piezoresistive diaphragms," <u>J. Appl. Phys.</u> , 62(11):3333-3337 (1987).

Washburn et al., "Molecular dielectrophoresis of nanoparticles," IEEE Transactions on Industry Applications, 30(4):835-843 (1994).



73	Xia et al., "Complex optical surfaces formed by replica molding against elastomeric masters." <u>Science</u> , 273:347-349 (1996).	
74	Xia et al., "Soft Lithography." <u>Angew. Chem. Int. Ed.</u> 37:551-575 (1998).	
75	Xia et al., "Micromodeling of Polymers in Capillaries: Applications in Microfabrication." <u>Chemistry of Materials</u> , 8(7):1558-1567 (1996) XP000626885	
76	Yang et al., "A MemS Thermopneumatic Silicone Membrane Valve", Proceedings of IEEE 10 th Annual International Workshop on MicroElectro Mechanical Systems, Sensors and Actuators, A04(1):101-108 (1998).	
77	Yazdi et al., "Micromachined inertial sensors," <u>Proceedings of IEEE</u> , 86(8):1640-1659 (1998).	
78	Young et al., "Contoured elastic-membrane microvalves for microfluidic network integration," <u>J. Biomechanical Engineering</u> , 121:2-6 (1999).	
79	XP-002149046, Ullmann's Encyclopedia of Industrial Chemistry, Sixth Edition, 1999 Electronic Release, 6 pages.	

Examiner Signature		Date Considered	
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 of 2

Complete if Known

Application Number 09/724,784
Filing Date 11/28/00
First Named Inventor Unger
Group Art Unit 1772
Examiner Name Unassigned
Attorney Docket Number 20174C-003000US

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U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.	U.S. Patent Document Number	Kind Code ¹ (if known)	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 2 of 2

Complete if Known

Application Number	09/724,784
Filing Date	11/28/00
First Named Inventor	Unger
Group Art Unit	1772
Examiner Name	Unassigned
Attorney Docket Number	20174C-003000US

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

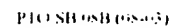
Examiner Initials *	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	1	Ahn et al., "Fluid Micropumps Based on Rotary Magnetic Actuators," <u>Proceedings of 1995 IEEE Micro Electro Mechanical Systems Workshop (MEMS '95)</u> , held in Amsterdam, Netherlands on 1-29-2-2-95, pgs. 408-412 (1995).	
	2	Benard et al., "A Titanium-Nickel Shape-Memory Alloy Actuated Micropump," <u>Proceedings of Transducers '97, 1997 International Conference on Solid-State Sensors and Actuators</u> , held in Chicago, IL, 6-16-19-1997, 1:361-364 (1997).	
	3	Gerlach, T., "Pumping Gases by a Silicon Micro Pump with Dynamic Passive Valves," <u>Proceedings of Transducers '97, 1997 International Conference on Solid-State Sensors and Actuators</u> , held in Chicago, IL, 6-16-19-1997, 1:357-360 (1997).	
	4	Jerman, H., "Electrically-Activated, Normally-Closed Diaphragm Valves," <u>Proceedings of Transducers '91, 1991 International Conference on Solid-State Sensors and Actuators</u> , pages 1045-1048 (1991).	
	5	Olsson et al., "Simulation Studies of Diffuser and Nozzle Elements for Valve-less Micropumps," <u>Proceedings of Transducers '97, 1997 International Conference on Solid-State Sensors and Actuators</u> , held in Chicago, IL, 6-16-19-1997, 2:1039-1043 (1997).	
	6	Shoji et al., "Smallest Dead Volume Microvalves for Integrated Chemical Analyzing Systems," <u>Proceedings of Transducers '91, 1991 International Conference on Solid-State Sensors and Actuators</u> , pages 1052-1055 (1991).	
	7	Vieder et al., "A Pneumatically Actuated Micro Valve with a Silicone Rubber Membrane for Integration with Fluid-Handling Systems," <u>Proceedings of Transducers '95, the 8th International Conference on Solid-State Sensors and Actuators and Eurosensors IX</u> , held in Stockholm, Sweden on 6-25-29-95, 2:284-286 (1995).	
	8	Nia et al., "Micromolding in Capillaries: Applications in Material Science," <u>J. American Chemical Society</u> , 118:5722-5731 (1996).	
	9	Yang et al., "A MEMS Thermopneumatic silicone Membrane Valve," <u>Proceedings of the IEEE 10th Annual Workshop of Micro Electro Mechanical Systems Workshop (MEMS '97)</u> , held 1-26-30-97 in Nagoya, Japan, pages 114-118 (1997).	

Examiner Signature	Date Considered
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Application Number

09/724,784

Filing Date

November 28, 2000

First Named Inventor

Unger	
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Art Unit

4763

Examiner Name

~~Allan W. Olsen~~

Attorney Docket Number

20174C-003000US

U.S. PATENT DOCUMENTS+

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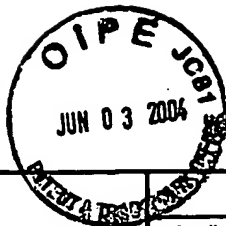
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1. The first step in the process of identifying a problem is to determine the nature of the problem. This involves gathering information about the problem and its context. The next step is to identify the causes of the problem. This involves analyzing the information gathered in the first step and identifying the factors that are contributing to the problem. The third step is to develop a plan to address the problem. This involves identifying the goals of the plan and the steps that need to be taken to achieve those goals. The fourth step is to implement the plan. This involves putting the plan into action and monitoring its progress. The fifth step is to evaluate the results of the plan. This involves comparing the actual results with the goals of the plan and identifying any areas for improvement.

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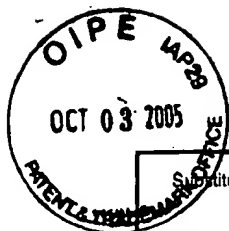
Substitute for form 1449B/PTO		Complete If Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/724,784
		Filing Date	November 28, 2000
		First Named Inventor	Marc Unger
		Art Unit	1732 1772
		Examiner Name	Allan W. Olsen <i>loney</i>
Sheet 1 of 1	Attorney Docket Number	20174C-003000US	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
<i>u</i>	1	ANDERSSON et al., Consecutive Microcontact Printing - Ligands for Asymmetric Catalysis in Silicon Channel, Sensors and Actuators, B, 3997, 2001, pp 1-7.	
<i>u</i>	2	CHAYEN, The Role of Oil in Macromolecular Crystallization, Structure, 1997, Vol. 5, No. 10, pp 1269-1274.	
<i>u</i>	3	DUCRUUX et al., Methods of Crystallization in Crystallization of Nucleic Acids and Proteins - A Practical Approach, IRL Press, Oxford. 1992; : 73- 98.	
<i>u</i>	4	MCPHERSON, Crystallization of Macromolecules: General Principles, Methods Enzymol., 1985, pp. 114, 112	
<i>u</i>	5	MCPHERSON et al., Crystallization of Proteins by Variations of pH of Temperature, Methods Enzymol., 1985; 114: pp. 125-127.	
<i>u</i>	6	MCPHERSON et al., Use of Polyethylene Glycol in the Crystallization of Macromolecules, Methods Enzymol., 1985; 114: pp. 120-125.	
<i>u</i>	7	PHILLIPS, Crystallization in Capillary Tubes, Methods Enzymol. 1985; 114: pp. 128- 131	
<i>u</i>	8	WU et al., MEMS Flow Sensors for Nano-Fluidic Applications, Sensors and Actuators A 89, 2001, pp 152-158.	

Examiner Signature	<i>D. Long</i>	Date Considered	5/11/06
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		Application Number	09/724,784
		Filing Date	November 28, 2000
		First Named Inventor	Marc A. Unger
		Art Unit	1772
		Examiner Name	Donald J. Loney
		Attorney Docket Number	20174C-003000US

U.S. PATENT DOCUMENTS+					
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1	A1	US-4,992,312	02-12-1991	Frisch	
2	A2	US-5,788,468	08-04-1998	Dewa et al.	
3	A3	US-6,345,502 B1	02-12-2002	Tai et al.	
4	A4	US-6,409,832 B2	06-25-2002	Weigl et al.	
5	A5	US-6,767,706 B2	07-27-2004	Quake et al.	

FOREIGN PATENT DOCUMENTS								
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Examiner Signature	<i>D. Loney</i>	Date Considered	5/11/06
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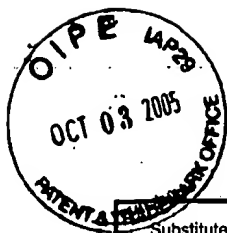
Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete If Known			
		Application Number	09/724,784		
		Filing Date	November 28, 2000		
		First Named Inventor	Marc A. Unger		
		Art Unit	1772		
		Examiner Name	Donald J. Loney		
Sheet	2	of	4	Attorney Docket Number	20174C-003000US

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
D	C1	"Biochips," Nature Biotechnology, Vol. 18, Supplement 2000, pp. IT43-IT44, 2000	
	C2	"Chapter 9: Microfluidic Devices," Micromachined Transducers Sourcebook, pp. 779-882, 1998	
	C3	"Electro Microfluidic Dual In-Line Package (EMDIP)," Sandia National Laboratories, 2 pages, no date	
	C4	ANDERSON, ROLFE C. et al., "Microfluidic Biochemical Analysis System," Transducers '97, 1997 International Conference on Solid-State Sensors and Actuators, Chicago, Illinois, pp. 477-480, 6/16-19/1997	
	C5	ANGELL, JAMES B. et al., "Silicon Micromechanical Devices," Scientific American, pp. cover, 44-55, 4/1983	
	C6	ARMANI, DENIZ et al., "Re-Configurable Fluid Circuits By PDMS Elastomer Micromachining," IEEE Int. Conf. Micro Electro Mech. Syst. Tech. Digest, Vol. 12, pp. 222-227, 1999	
	C7	BALLANTYNE, J. P. et al., "Selective Area Metallization By Electron-Beam Controlled Direct Metallic Deposition," J. Vac. Sci. Technol., Vol. 10, No. 6, pp. 1094-1097, 11/1973	
	C8	BLOOMSTEIN, T. M. et al., "Laser-Chemical Three-Dimensional Writing For Microelectromechanics And Application To Standard-Cell Microfluidics," J. Vac. Sci. Technol. B, Vol. 10, No. 6, pp. 2671-2674, 11/1992	
	C9	BOUSSE, LUC et al., "Electrokinetically Controlled Microfluidic Analysis Systems," Annu. Rev. Biophys. Biomol. Struct., Vol. 29, pp. 155-181, 2000	
	C10	CHOU, HOU-PU et al., "Integrated Elastomer Fluidic Lab-On-A-Chip-Surface Patterning And DNA Diagnostics," Proceedings of the Solid State Actuator and Sensor Workshop, Hilton Head, South Carolina, 4 pages, 2000	
	C11	CHOU, HOU-PU et al., "Multiple Disease Diagnostics On A Single Chip," Biophysics Lab, Caltech, pp. 1-4, 3/1/2000	
	C12	FETTINGER, J. C. et al., "Stacked Modules For Micro Flow Systems In Chemical Analysis: Concept And Studies Using An Enlarged Model," Sensors and Actuators B, Vol. 17, pp. 19-25, 1993	
	C13	FOLCH, A. et al., "Molding Of Deep Polydimethylsiloxane Microstructures For Microfluidics And Biological Applications," Journal of Biomechanical Engineering, Vol. 121, pp. 28-34, 2/1999	
	C14	GALAMBOS, PAUL et al., "Electrical And Fluidic Packaging Of Surface Micromachined Electro-Microfluidic Devices," 8 pages, no date	
	C15	GREENE, CHANA, "Characterizing The Properties Of PDMS," pp. 1-11, Summer 2000	
OK	C16	GUÉRIN, L. J. et al., "Simple And Low Cost Fabrication Of Embedded Micro-Channels By Using A New Thick-Film Photoplastic," Transducers '97, 1997 International Conference on Solid-State Sensors and Actuators, Chicago, Illinois, pp. 1419-1422, 6/18-19/1997	

Examiner Signature	<i>D. Loney</i>	Date Considered	5/11/06
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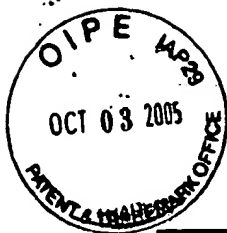
Substitute for form 1449B/PTO		Complete If Known			
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/724,784		
		Filing Date	November 28, 2000		
		First Named Inventor	Marc A. Unger		
		Art Unit	1772		
		Examiner Name	Donald J. Loney		
Sheet	3	of	4	Attorney Docket Number	20174C-003000US

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
h	C17	HICKS, JENNIFER, "Genetics And Drug Discovery Dominate Microarray Research," R&D Magazine, pp. 28-33, 2/1999	
	C18	JO, BYUNG-HO et al., "Fabrication Of Three-Dimensional Microfluidic Systems By Stacking Molded Polydimethylsiloxane (PDMS) Layers" SPIE, Vol. 3877, pp. 222-229, 9/1999	
	C19	JO, BYUNG-HO et al., "Three-Dimensional Micro-Channel Fabrication In Polydimethylsiloxane (PDMS) Elastomer," Journal of Microelectromechanical Systems, Vol. 9, No. 1, pp. 76-81, 3/2000	
	C20	KAGAN, C. R., "Organic-Inorganic Hybrid Materials As Semiconducting Channels In Thin-Film Field-Effect Transistors," Science, Vol. 286, pp. 945-947, 10/29/1999	
	C21	KAPUR, RAVI et al., "Fabrication And Selective Surface Modification Of 3-Dimensionally Textured Biomedical Polymers From Etched Silicon Substrates," Journal of Biomedical Materials Research, Vol. 33, pp. 205-216, 1996	
	C22	KHOO, MELVIN et al., "A Novel Micromachined Magnetic Membrane Microfluid Pump," pp. 1-4, no date	
	C23	KIM, ENOCH et al., "Polymer Microstructures Formed By Moulding In Capillaries," Nature, Vol. 376, pp. 581-584, 8/17/1995	
	C24	KIRK-OTHMER, "Concise Encyclopedia of Chemical Technology," John Wiley & Sons, 5 pages, no date	
	C25	KUMAR, AMIT et al., "Features Of Gold Having Micrometer To Centimeter Dimensions Can Be Formed Through A Combination Of Stamping With An Elastomeric Stamp And An Alkanethiol 'Ink' Followed By Chemical Etching," Appl. Phys. Lett., Vol. 63, No. 14, pp. 2002-2004, 10/4/1993	
	C26	KUMAR, AMIT et al., "Patterning Self-Assembled Monolayers: Applications In Materials Science," Langmuir, Vol. 10, pp. 1498-1511, 1994	
	C27	LAGALLY, ERIC T. et al., "Monolithic Integrated Microfluidic DNA Amplification And Capillary Electrophoresis Analysis System," Sensors and Actuators B, Vol. 63, pp. 138-146, 2000	
	C28	LAMMERINK, T. S. J. et al., "Modular Concept For Fluid Handling Systems," IEEE, pp. 389-394, 1996	
	C29	LI, PAUL C. H. et al., "Transport, Manipulation, And Reaction Of Biological Cells On-Chip Using Electrokinetic Effects," Analytical Chemistry, Vol. 69, No. 8, pp. 1564-1568, 4/15/1997	
	C30	LICKLIDER, LARRY et al., "A Micromachined Chip-Based Electrospray Source For Mass Spectrometry," Analytical Chemistry, Vol. 72, No. 2, pp. 367-375, 1/15/2000	
	C31	MANZ, A. et al., "Micromachining Of Monocrystalline Silicon And Glass For Chemical Analysis Systems," Trends in Analytical Chemistry, Vol. 10, No. 5, pp. 144-149, 1991	
m	C32	MARSHALL, SID, "Fundamental Changes Ahead For Lab Instrumentation," R&D Magazine, 5 pages, 2/1999	

Examiner Signature	<i>D. Loney</i>	Date Considered	5/4/06
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		Application Number	09/724,784		
		Filing Date	November 28, 2000		
		First Named Inventor	Marc A. Unger		
		Art Unit	1772		
		Examiner Name	Donald J. Loney		
Sheet	4	of	4	Attorney Docket Number	20174C-003000US

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DL	C33	MARSILI, RAY, "Lab-On-A-Chip Poised To Revolutionize Sample Prep," R&D Magazine, 5 pages, 2/1999	
	C34	MCDONALD, J. COOPER et al., "Fabrication Of Microfluidic Systems In Poly(dimethylsiloxane)," Electrophoresis, Vol. 21, pp. 27-40, 2000	
	C35	OLESCHUK, RICHARD D. et al., "Analytical Microdevices For Mass Spectrometry," Trends In Analytical Chemistry, Vol. 19, No. 6., pp. 379-388, 2000	
	C36	SANJOH, AKIRA et al., "Spatiotemporal Protein Crystal Growth Studies Using Microfluidic Silicon Devices," Journal of Crystal Growth, Vol. 196, pp. 691-702, 1999	
	C37	THOMPSON, L. F. et al., "Introduction To Microlithography," 185th Meeting of the American Chemical Society, Seattle, WA, pp. 2 cover pages, 1-13, 3/20-25/1983	
	C38	VAN DEN BERG, A. et al., "Micro Total Analysis Systems," Proceedings of the μ TAS '94 Workshop, University of Twente, The Netherlands, 17 pages, 11/21-22/1994	
	C39	VERPOORTE, ELISABETH M. J. et al., "Three-Dimensional Micro Flow Manifolds For Miniaturized Chemical Analysis Systems," J. Micromech. Microeng., Vol. 7, pp. 246-256, 1994	
	C40	WILBUR, JAMES L. et al., "Lithographic Molding: A Convenient Route To Structures With Sub-Micrometer Dimensions," Adv. Mater., Vol. 7, No. 7, pp. 649-652, 1995	
	C41	XIA, YOUNAN et al., "Reduction In The Size Of Features Of Patterned SAMs Generated By Microcontact Printing With Mechanical Compression Of The Stamp," Adv. Mater., Vol. 7, No. 5, pp. 471-473, 1995	
	C42	XU, BING et al., "Making Negative Poisson's Ratio Microstructures By Soft Lithography," Adv. Mater., Vol. 11, No. 14, pp. 1186-1189, 1999	
DL	C43	YANG, XING et al., "A Lower Power MEMS Silicone/Parylene Valve," Solid-State Sensor and Actuator Workshop, Hilton Head Island, South Carolina, 4 pages, 6/7-11/1998	

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Examiner Signature	<i>D. Loney</i>	Date Considered	5/11/06
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Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet	1	of	2	Attorney Docket Number	20174C-003000US
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Complete if Known

Application Number	09/724,784
Filing Date	November 28, 2000
First Named Inventor	Marc A. Unger
Art Unit	1772
Examiner Name	Donald J. Loney

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number Kind Code ² (if known)			
DL	A6	US-2001-0033796 A1	10-25-2001	Unger et al.	
	A7	US-2001-0054778 A1	12-27-2001	Unger et al.	
	A8	US-2002-0029814 A1	03-14-2002	Unger et al.	
	A9	US-2002-0037499 A1	03-28-2002	Quake et al.	
	A10	US-2002-0144738 A1	10-10-2002	Unger et al.	
	A11	US-2003-0019833 A1	01-30-2003	Unger et al.	
	A12	US-6,793,753 B2	09-21-2004	Unger et al.	
	A13	US-2005-0112882 A1	05-26-2005	Unger et al.	
	A14	US-6,899,137 B2	05-31-2005	Unger et al.	
	A15	US-2005-0166980 A1	08-04-2005	Unger et al.	
	A16	US-6,929,030 B2	08-16-2005	Unger et al.	
	A17	US-2005-0226742 A1	10-13-2005	Unger et al.	

FOREIGN PATENT DOCUMENTS

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✓	C44	CALKINS, KATHRYN, "Mycometrix: Rubber Chips," BioCentury, 2 pages, October 16, 2000	

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Examiner Signature		Date Considered	
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